Arctic Sun®
Quick Guide

Cooling

» Always operate in Automatic Mode

1. Turn device on at back of machine

2. Connect pads

3. Connect temperature probe

4. While in STOP Mode, Press DOWN arrow once to reach "Target Temp- Automatic Mode." If target is set at desired temp, skip to step #8

5. Press "Enter" to change value

6. Hold DOWN arrow until target temperature is displayed

7. Press "Enter" to save value

8. Press "Automatic Mode" to begin cooling

Rewarming

» Must change Target Temp

1. Place device in STOP Mode

2. Press DOWN arrow once

3. Press "Enter" to change value

4. Hold UP arrow until rewarming target temp is displayed

5. Press "Enter" to save value

» Then change Warming Rate

6. Press DOWN arrow once, see display "Warm MAX- Automatic Mode"

7. Press "Enter" to change displayed flashing value

8. Hold DOWN arrow until desired rewarming rate is displayed

9. Press "Enter" to save value

10. Press "Automatic Mode" to begin rewarming

»» ALWAYS PURGE PRIOR TO DISCONNECTING PADS ««

Questions? For technical or clinical questions, call Medivance toll-free at **1-866-840-9776**.

Alarms

Alarms

ALARM CODE NUMBERS **03, 04, 05, 06**	
ISSUE	Reservoir is empty or almost empty
ACTION	- Purge pads if connected - Refill reservoir

ALARM CODE NUMBERS **10, 23**	
ISSUE	Low Temperature Alarm: In "Automatic Mode," if the patient temperature is 32.0°C (89.6°F) and water temperature is below 32.0°C (89.6°F), an alarm condition will occur and the system will return to stop mode (Patient Temperature 1 or 2)
ACTION	- System will stop. Press "Automatic Mode" and observe water temperature to see if it has started to increase - Verify patient temperature from another source - Turn system off - Restart the device in "Automatic Mode" - If water temperature does not rise in response to patient temperature, shut system off and call Medivance Service

ALARM CODE NUMBERS **09, 11, 22, 24**	
ISSUE	The Patient Temperature reading is either equal, greater or lesser than the user-defined value established in the custom settings menu (Patient Temperature 1 or 2)
ACTION	- Check patient temperature - Cancel alert - If system stopped, alert will reappear - Adjust Patient Low or High Temperature Alert in the custom menu if desired

ALARM CODE NUMBERS **08, 21**	
ISSUE	High Temperature Alarm: In "Automatic Mode," if the patient temperature is 38.0°C (100.4°F) and water temperature is greater than 38.0°C (100.4°F), an alarm condition will occur and return to stop mode (Patient Temperature 1 or 2)
ACTION	- System will stop. Press "Automatic Mode" and observe water temperature to see if the water temperature has started to decrease - Verify patient temperature from another source - Check that the vents on the side of the machine are not blocked - Turn system off - Restart the device in "Automatic Mode" - If water temperature does not decrease in response to patient temperature, shut system off and call Medivance Service

ALARM CODE NUMBERS **13, 26**	
ISSUE	Low Temperature Alarm: In "Manual Mode," if the patient temperature is 32.0°C (89.6°F) and water temperature is below 32.0°C (89.6°F) (Patient Temperature 1 or 2)
ACTION	- Verify patient temperature from another source - Increase Water Target Temperature

ALARM CODE NUMBERS **14–20; 50, 51**	
ISSUE	Temperature on display changes significantly within seconds OR patient temperature is not displayed on the screen
ACTION	- Check the connection between the patient temperature probe and the temperature cable attached to the device - Ensure that the connection between the temperature probe and cable is thoroughly dry. If wet, replace cable - Check for secure placement of the probe - Replace temperature probe if necessary - If using Foley probe, ensure it is straight and retrograde urine flow is not occurring - Confirm patient temperature from second source - Ensure probe and cable are connected to Patient Temperature 1 and NOT Patient Temperature 2 input - If patient temperature is out of range, three dashes (---) will appear on the screen. [Patient temperature ranges are 10-42°C (50-107.6°F)] - Contact Medivance Service if alarm persists

ALARM CODE NUMBERS **25, 12**	
ISSUE	High Temperature Alert: In "Manual Mode," if the patient temperature is 38.0°C (100.4°F) and water temperature is greater than patient temperature (Patient Temperature 1 or 2)
ACTION	- Verify patient temperature from another source - Decrease Water Target Temperature

ALARM CODE NUMBERS **52, 53**	
ISSUE	Cold Water Exposure Alert: In "Automatic or Manual Mode," if the water temperature has remained below 10°C (50°F) for 8 of 10 hours of consecutive treatment, alert will occur every 4 hours until water temperature rises above 10°C (50°F)
ACTION	- Cancel alert - Follow the decision tree
ISSUE	Cold Water Exposure Alarm: In "Automatic or Manual Mode," if ten (10) cold water alerts have occurred since treatment began and water temperature has remained below 10°C (50°F) for 4 hours since the last alert, an alarm will occur and the system will return to STOP Mode
ACTION	- System will stop. Follow decision tree - Consider discontinuation of treatment

Troubleshooting: Observational Issues	
ISSUE	When cooling in "Automatic Mode," water temperature begins to increase prior to reaching the target
ACTION	- As the patient's temperature decreases, the control algorithm will increase the water temperature to bring the patient to target with minimal overshoot. Water temperature increases or decreases to reach and maintain target
ISSUE	When warming in "Automatic Mode," water temperature begins to decrease prior to reaching the target
ACTION	- As the patient's temperature increases, the control algorithm will decrease the water temperature to bring the patient to target with minimal overshoot. Water temperature increases or decreases to reach and maintain target

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Pad Placement

Step 1

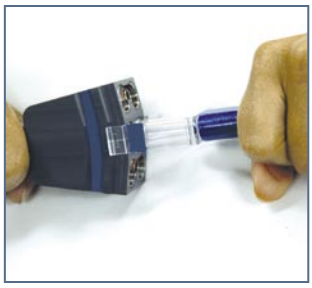
Arctic Sun Energy Transfer Pad™ placement

1. Choose appropriate size pads for patient. (See pad sizing chart)
2. Apply pads to clean dry intact skin
3. Roll the patient on his/her side
4. Align the first back pad parallel to the spine and wrap around the front of the abdomen
5. Ensure that the curve of the pad is at least 2 inches below the underarm to allow proper range of motion. Keep breasts and skin folds clear of the pad edge
6. Wrap the appropriate (right or left) leg pad around the thigh
7. Make sure the pad line is anterior and that it is pointed toward the foot of the bed and the pads are placed on the correct sides (right and left) *(femoral access should be exposed)*
8. Turn the patient and repeat

Step 2

Connect patient pad lines to the fluid delivery line from the Arctic Sun

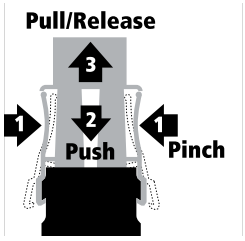
1. Connect each pad line to the receptor below on the manifold block shown
2. Fit connectors white side to white side, blue side to blue side
3. Passively insert connectors—do not touch fins during insertion



Step 3

Terminate procedure

1. Press Purge Key to empty water from pads
2. Once purge complete message is displayed, squeeze or pinch fins, push, and then pull to remove pad connections from manifold block
3. Remove pads, discard, check fluid level of reservoir, then turn off Arctic Sun



A.

B.

C.

D.

E.

For patients with a larger abdomen, an optional universal pad(s) may be applied

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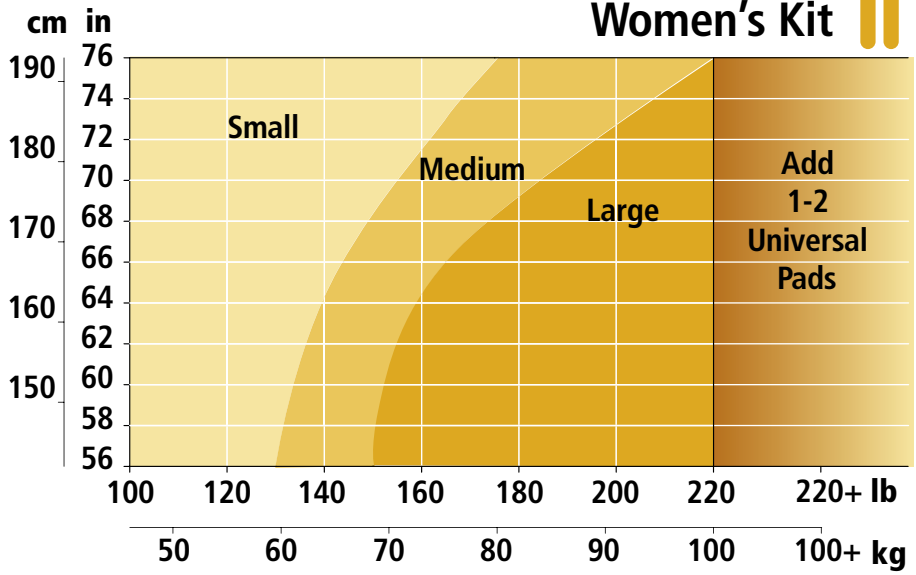
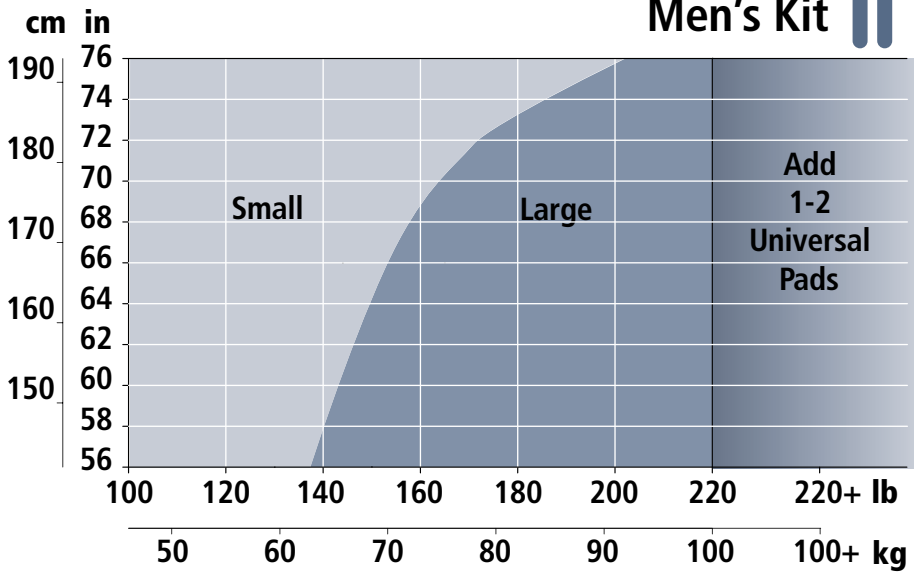
Pad Sizing Chart

Women's Kit



Men's Kit



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Decision Tree

Decision Tree for Optimal Patient Temperature Management

Follow this decision tree if:

- Patient has been cooled continuously for over 4 hours and has NOT reached target temperature or
- Water temperature has been below 10°C (50°F) for greater than 8 continuous hours or
- The cold water exposure alert appears (software version 3.05 and higher)

1. Set-Up

Verify that all custom parameters and patient set-up are correct:

- Patient target temperature is set
- "Automatic Mode" is activated
- "Automatic Mode"—minimum and maximum water temperature are set to the correct limits
- Time to target (cool and warm) is set to MAX
- A full set of (4) Energy Transfer Pads of the appropriate size for the patient are being used and are well-adhered to the patient

2. System Performance

Verify, and if necessary, correct the following parameters:

- Water flow rate is greater than or equal to 2.3 l/min after at least 1 hour of continuous use *(For flow rate troubleshooting, refer to the Arctic Sun Operator's Manual, Section 5.3)*
- The patient temperature probe is properly placed and is providing an accurate and stable temperature

3. Shivering Control

If the device set-up and technical performance is correct and Patient Target Temperature is still not reached and/or water temperature remains below 10°C (50°F), then the patient is generating excessive heat, most likely from shivering (which may or may not be visible):

- Administer additional medication for shivering control, adequate for the patient weight and magnitude of shivering
- Evaluate patient response to medication

4. Clinical Decisions

If all of the above considerations have been addressed and the patient still has not reached target temperature and/or the water temperature remains below 10°C (50°F), exposure of the skin to low water temperatures for an extended period of time may increase the risk of skin injury. The physician and nursing staff must determine whether:

- Minimum water temperature should be increased
- Lowest patient temperature achieved becomes the new target temperature
- Cooling therapy should be discontinued

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Documentation

Arctic Sun documentation should include the following:

Initial:

- Time of application and initiation of therapy
- Size of pads
- Target temp
- Probe type
- Patient's current core temperature
- Mode of operation
- Integrity of patient's skin

Initiation of rewarming:

- New target temperature
- Rate of rewarming as it appears on rewarming screen
- Patient's temperature
- Mode of operation
- Water temperature

Follow-up documentation Q 1-2 hours:

- Patient's temperature
- Water temperature
- Presence of shivering

Follow-up documentation Q 6-12 hours/PRN:

- Integrity of patient's skin
- Administration of shivering meds and patient's response
- Patient's temperature from another source
- Time patient reaches target temperature
- Disconnection/interruption of therapy for any reason
- Time therapy is resumed

Sample documentation chart:

ARCTIC SUN Patient Temperature Management Documentation					
Date:		Patient Target Temperature:		Pad Size: S M L Universal Pads: 0 1 2	
Time	Patient Temperature[1]	Water Temp[2] < 10°C (50°F)	Shivering Medications	Shivering Visible[3]	Notes
		☐		☐	
		☐		☐	
		☐		☐	

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Conversion and Pad Weight Charts

Arctic Sun Pad Weights

	317-05 (Small)	317-07 (Medium)	317-09 (Large)	317-00 (Universal)
Empty	3.1 lbs 1.41 kg	3.2 lbs 1.46 kg	3.6 lbs 1.6 kg	0.5 lbs 0.24 kg
With water	4.6 lbs 2.07 kg	4.7 lbs 2.15 kg	5.3 lbs 2.39 kg	0.8 lbs 0.35 kg

°C to °F Conversion Table

°C	°F
42.0	107.6
41.9	107.4
41.8	107.2
41.7	107.1
41.6	106.9
41.5	106.7
41.4	106.5
41.3	106.3
41.2	106.2
41.1	106.0
41.0	105.8
40.9	105.6
40.8	105.4
40.7	105.3
40.6	105.1
40.5	104.9
40.4	104.7
40.3	104.5
40.2	104.4
40.1	104.2
40.0	104.0

°C	°F
39.9	103.8
39.8	103.6
39.7	103.5
39.6	103.3
39.5	103.1
39.4	102.9
39.3	102.7
39.2	102.6
39.1	102.4
39.0	102.2
38.9	102.0
38.8	101.8
38.7	101.7
38.6	101.5
38.5	101.3
38.4	101.1
38.3	100.9
38.2	100.8
38.1	100.6
38.0	100.4

°C	°F
37.9	100.2
37.8	100.0
37.7	99.9
37.6	99.7
37.5	99.5
37.4	99.3
37.3	99.1
37.2	99.0
37.1	98.8
37.0	98.6
36.9	98.4
36.8	98.2
36.7	98.1
36.6	97.9
36.5	97.7
36.4	97.5
36.3	97.3
36.2	97.2
36.1	97.0
36.0	96.8

°C	°F
35.9	96.6
35.8	96.4
35.7	96.3
35.6	96.1
35.5	95.9
35.4	95.7
35.3	95.5
35.2	95.4
35.1	95.2
35.0	95.0
34.9	94.8
34.8	94.6
34.7	94.5
34.6	94.3
34.5	94.1
34.4	93.9
34.3	93.7
34.2	93.6
34.1	93.4
34.0	93.2

°C	°F
33.9	93.0
33.8	92.8
33.7	92.7
33.6	92.5
33.5	92.3
33.4	92.1
33.3	91.9
33.2	91.8
33.1	91.6
33.0	91.4
32.9	91.2
32.8	91.0
32.7	90.9
32.6	90.7
32.5	90.5
32.4	90.3
32.3	90.1
32.2	90.0
32.1	89.8
32.0	89.6

C x 1.8 + 32 = °F or (°F - 32) x .555 = °C

Filling the Reservoir

Use sterile or distilled water only
Place fill tube located on back of device into water supply
Scroll menu to “Fill Screen” and follow instructions
For complete instructions, consult the Operator’s Manual, Section 3

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